

Overview of Environmental Compliance



Restoring and Protecting Our Nation's Coasts through Stewardship of OCS Resources



BOEM
BUREAU OF OCEAN ENERGY MANAGEMENT



- Potential impacts (direct, indirect, and cumulative) vary with resources present in the affected environment.
- Duration and intensity of impacts determined by location, volume, timing, dredging technology, etc.
- Minimize deleterious impacts through the implementation of impact-reducing mitigation:
 - Location avoidance
 - Environmental windows



Stipulations of Construction

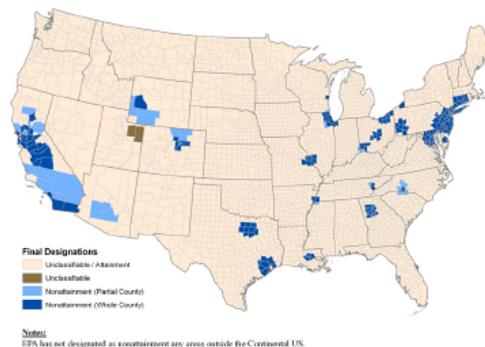
- Notifications
- Dredge Positioning
- Notice to Other Users (pipelines)
- Bathymetric Surveys (pre/post)
- Dredge Operating and Inspection Requirements
- Production and Volume Information
- Marine Pollution Control and Contingency Plan
- Discovery of Ordnance Procedures
- Protection of Archaeological Resources
- Project Completion Reporting
- Environmental Compliance Reporting
- Environmental Monitoring



- The Clean Air Act requires BOEM to ensure that beach nourishment and coastal restoration projects do not cause or contribute to the deterioration of air quality.
- Estimating a proposed activity's emissions and evaluating the degree of dispersion of pollutants is key in evaluating the potential effect of the proposed activities on air quality and determining appropriate mitigation.



Ozone Nonattainment Areas: 2008 NAAQS



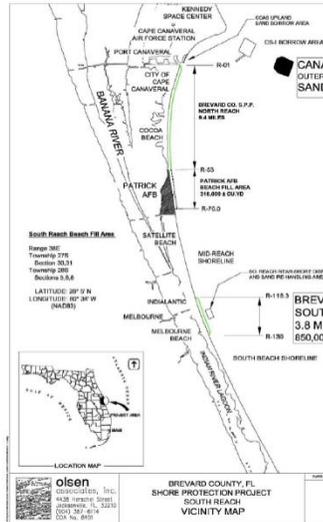
- **Goal:** Provide a standardized, rigorous, technically sound and defensible procedure for calculating criteria pollutant and greenhouse gas emissions for proposed beach nourishment/coastal restoration projects.
- **Objectives:** Develop the Dredging Project Emissions Calculator (DPEC) database program:
 - Input: project design parameters and info on diesel equipment
 - Output: criteria pollutant (CO, VOC, NO_x, SO₂, PM) and GHG emissions



Dredging Project Emissions Calculator (DPEC)

EXAMPLE APPLICATION

- 2010 Brevard County, FL South Reach Shore Protection Project; Feb – Apr 2010 (Olsen, 2010)
- Move 650,000 cy from CSII 29 miles south to Brevard Co. SPP South Reach
- 6,540 cy trailing suction hopper dredge *Liberty Island*
- *Yellow Equip: 2 bulldozers, 1 excavator*
- *3 support vessels*



RAMBOLL ENVIRON

EQUIPMENT SPECIFICATIONS

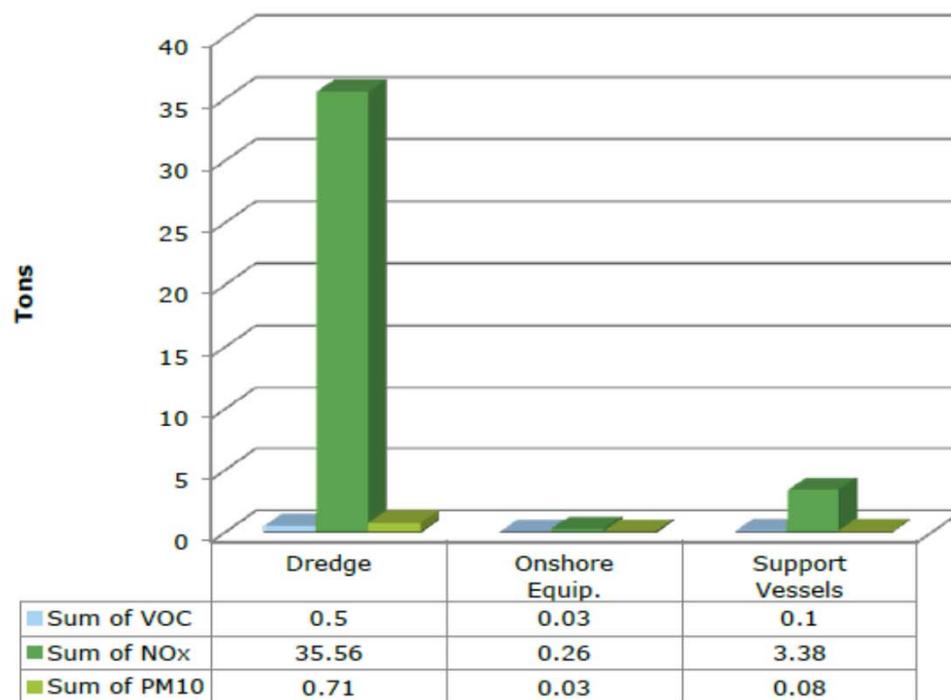
Equipment	Specifications	
Dredge	Type	Trailing suction hopper
	Hopper Size	6,540 cy
	Hopper Useable Fraction	0.8060
	Hopper Sand Capacity Factor	0.8990
	Propulsion Engines (two)	MY 2001, 12 cylinder, 45 (3700 bkW) 18.5 l/cylin LF
Auxiliary Engine (one)	MY 2001, 12 cylinder, 50 (3801 bkW) 18.5 l/cylin LF	
Generator (one)	MY 2001, 2 l/cyl, 416 bk LF	
Support (Auxiliary) Vessels	Crew Boat (one main engine)	MY 1999, 2 l/cyl, 447 bk LF
	Tow Boat (two main engines)	MY 2006, 4 l/cyl, 447 bk LF
Shore Construction Equipment	Bulldozer (Crawler Tractor)	150 hp diesel
	Bulldozer (Crawler Tractor)	150 hp diesel
	Excavator	138 hp diesel



RESULTS

Source Name	Type	Emissions (short tons)						
		HC	VOC	CO	NOx	PM ₁₀	PM _{2.5}	CO ₂
INSIDE STATE WATERS								
Bulldozer	Crawler Tractors	0.01	0.01	0.03	0.09	0.01	0.01	15
Bulldozer	Crawler Tractors	0.01	0.01	0.03	0.09	0.01	0.01	15
Crew Boat	Crew Boat	0.03	0.03	0.19	1.19	0.03	0.03	81
Excavator	Excavators	0.01	0.01	0.03	0.08	0.01	0.01	15
Liberty Island Aux.	Auxiliary	0.02	0.02	0.40	1.70	0.03	0.03	109
Liberty Island Aux.	Auxiliary	0.03	0.03	0.50	2.12	0.04	0.04	136
Liberty Island Generator	Vessel-mounted	0.00	0.01	0.03	0.17	0.00	0.00	12
Liberty Island Generator	Vessel-mounted	0.01	0.01	0.04	0.22	0.01	0.00	15
Liberty Island Main	Propulsion	0.05	0.06	0.97	4.12	0.08	0.08	265
Liberty Island Main	Propulsion	0.04	0.04	0.78	3.30	0.07	0.06	213
Tender1	Tender	0.00	0.00	0.00	0.00	0.00	0.00	0
Tow Boat	Tow Boat	0.06	0.07	0.43	2.19	0.05	0.04	162
TOTALS FOR EMISSIONS SOURCES INSIDE		0.27	0.28	3.43	15.26	0.33	0.32	1037
OUTSIDE STATE WATERS								
Liberty Island Aux.	Auxiliary	0.01	0.01	0.25	1.06	0.02	0.02	69
Liberty Island Aux.	Auxiliary	0.09	0.09	1.60	6.79	0.14	0.13	437
Liberty Island Generator	Vessel-mounted	0.00	0.00	0.02	0.11	0.00	0.00	8
Liberty Island Generator	Vessel-mounted	0.02	0.02	0.11	0.69	0.02	0.02	48
Liberty Island Main	Propulsion	0.17	0.18	3.11	13.21	0.26	0.26	851
Liberty Island Main	Propulsion	0.03	0.03	0.49	2.07	0.04	0.04	133
TOTALS FOR EMISSIONS SOURCES OUTSIDE		0.32	0.33	5.57	23.94	0.48	0.46	1545
ALL LOCATIONS AND SOURCES								
TOTALS FOR EMISSIONS AT ALL LOCATIONS		0.59	0.62	9.00	39.20	0.81	0.78	2583

Project Total Emissions



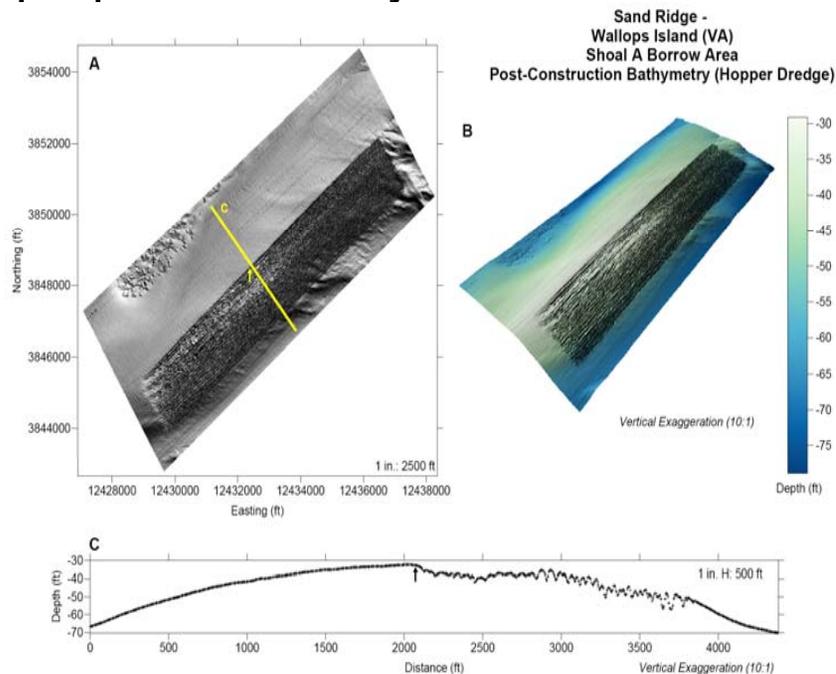
ENVIRON International Corp. and Woods Hole Group, 2013. Improving Emission Estimates and Understanding of Pollutant Dispersal for Impact Analysis of Beach Nourishment and Coastal Restoration Projects. U.S. Dept. of the Interior, Bureau of Ocean Energy Management Headquarters, Herndon, VA. OCS Study BOEM 2013-123. 69 pp.

Report is available at:

<http://www.data.boem.gov/PI/PDFImages/ESPIS/5/5300.pdf>



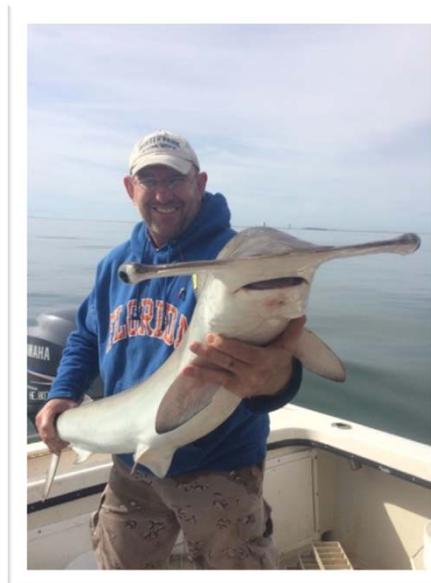
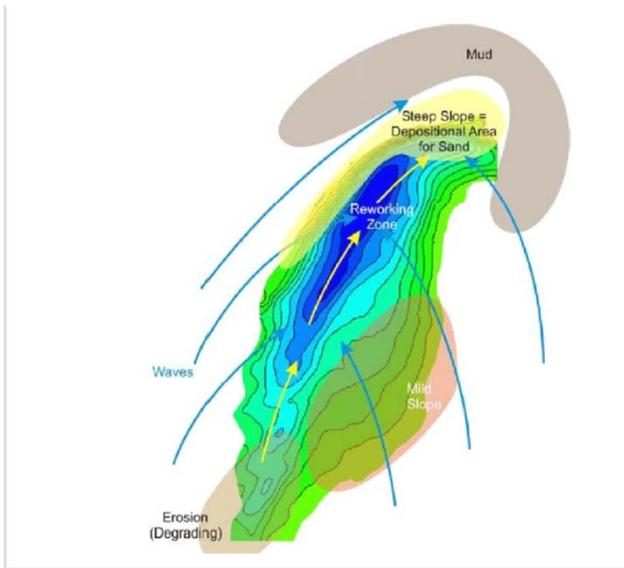
- NOAA Fisheries responsible for the identification and protection of essential marine and anadromous fish habitats
- NOAA Fisheries defines Essential Fish Habitat (EFH) for federally managed species, supporting a primary goal of maintaining sustainable fisheries
- A federal agency has authorized, funded, or undertaken part or all of a proposed activity.



- The action will “adversely” affect EFH. An adverse effect is defined as *any impact that reduces quality and/or quantity of EFH.*



- The action agency submits an EFH Assessment to NOAA Fisheries.
- NOAA Fisheries reviews the EFH Assessment, and, if necessary, provides EFH Conservation Recommendations to the action agency within 30-60 days.
- The action agency responds to NOAA Fisheries within 30 days with information on how it will proceed with the action.



Essential Fish Habitat

Potential Impacts

Loss of prey species

Species displacement

Alteration of shoal geomorphology

Alteration of habitat value

Potential Conservation Recommendations

Leave undisturbed areas

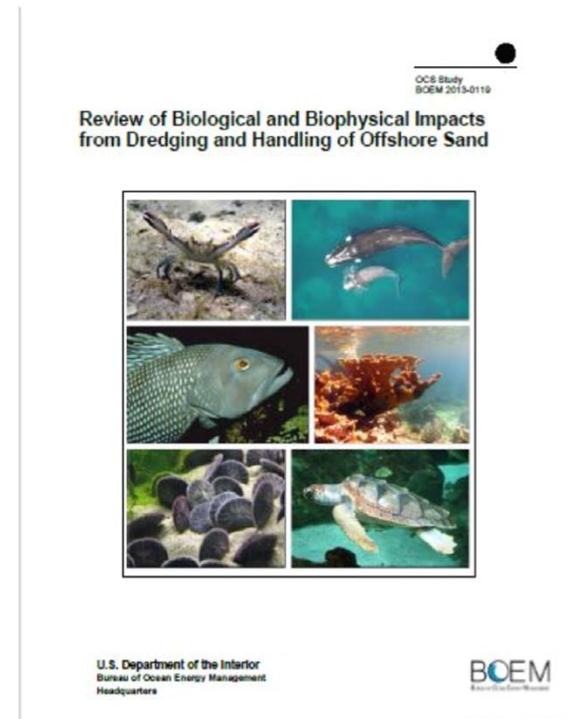
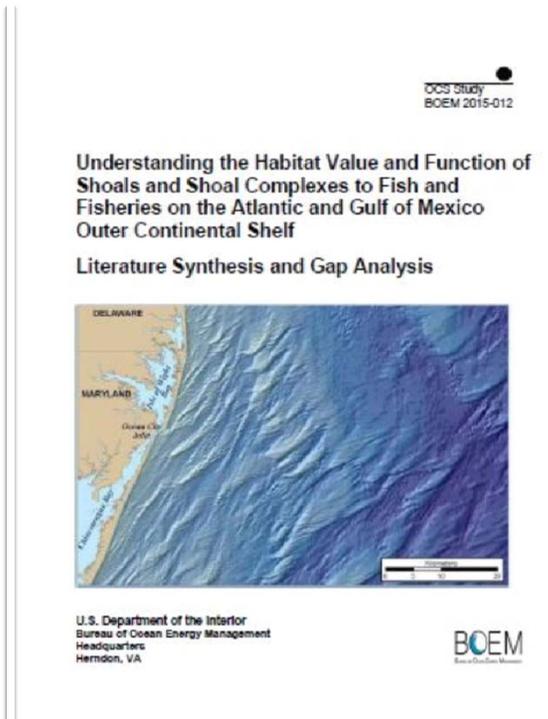
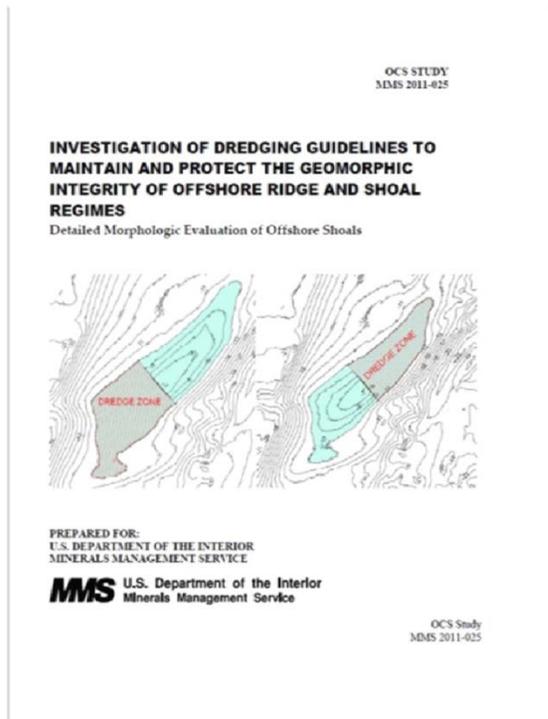
Target active accretional features

Shallow dredge cuts to minimize impacts to geomorphology and potential for pitting

Pre- and post-bathymetric surveys



- Interested in the efficacy of these practices
 - Canaveral Shoals study and recovery



Endangered Species Act

- The Endangered Species Act (ESA) directs all Federal agencies to work to conserve endangered and threatened species.
- Section 7 of the Act, called "**Interagency Cooperation**" is the mechanism by which Federal agencies ensure the actions they take, including those they fund or authorize, do not jeopardize the existence of any listed species.



- Formal or informal consultation may occur
- Formal consultation = when a Federal action is likely to adversely affect a listed species or its designated critical habitat
- Formal consultation = submission of a biological assessment by the Federal Agency
- 135 days to review and issue a biological opinion
- The biological opinion will include an incidental take statement, if appropriate, and provide reasonable and prudent measures (and **Terms and Conditions implementing these measures**) to minimize the impacts of any anticipated take of the species.
- <https://www.fws.gov/midwest/endangered/section7/index.html>



Endangered Species Act

Potential Species Impacted

Sea turtles (loggerhead, green, Kemp's ridley, leatherback, hawksbill)

North Atlantic right whale

Humpback whale

Fin whale

Atlantic sturgeon

Potential Terms and Conditions

Relocation trawling

Protected species observers

Dredge windows

Reporting requirements

Draghead deflector



- 24-hour relocation trawling
- Relocation trawling shall be conducted for the 3 days (72 hours) immediately prior to commencement of hopper dredging operations
- Trawl tow-time duration shall not exceed 42 minutes and trawl speeds shall not exceed 3.5 knots.
- Sea turtles captured shall be handled in a manner designed to ensure their safety and viability.
- Biological Data Collection



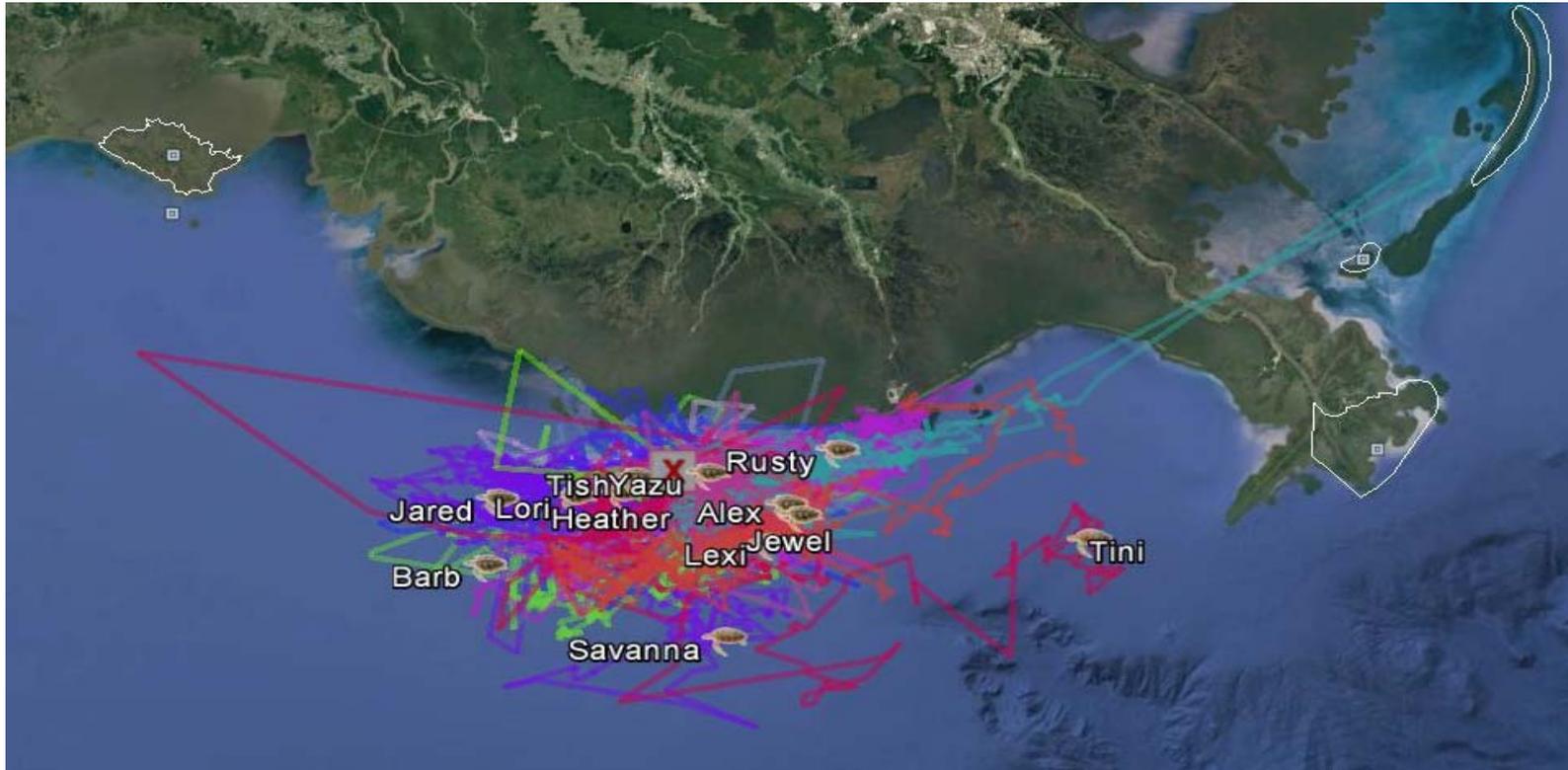
- Project Duration: 3.5 years
 - 20% conducted using hopper dredges
- Turtles Relocated: 198
 - 117 ridleys
 - 78 loggerheads
 - 2 greens
- Recaptures: 3 from this study
- There were no turtle mortalities or injuries associated with trawling on this project.



Results

#	Turtle	Species	Capture date	Recapture?	SCL-tip (cm)	CCL-tip (cm)	Sex	Satellite tag	R Flipper tag	L Flipper tag
1	Rusty	LK	5/18/2016	No	63.7	66.5	M	15A0930/161461	UUS146	UUS145
2	Heather	LK	5/19/2016	No	56.6	59.5	F	15A0927/161458	UUS135	UUS134
3	Jewel	LK	5/19/2016	No	63.6	67.9	F	14A0179/154846	UUS137	UUS136
4	Alex	LK	5/21/2016	No	61.3	64.9	M	15A0540/154844	UUS139	UUS138
5	Tish	LK	5/21/2016	Yes	67.5	70.5	F	15A0026/154835	UUS142	UUS140
6	Lori	LK	5/22/2016	No	61.5	64.4	F	15A0522/154847	UUS144	UUS143
7	Jared	LK	5/23/2016	No	66.1	69.5	M	15A0536/154840	UUH366	UUH365
9	Yazu	LK	6/8/2016	No	58.7	61.7	M	15A0019/154833	UUS162	EEJ893
10	Barb	LK	6/9/2016	No	59.3	62.2	F	15A0931/161462	UUS164	UUS163
11	Lexi	LK	6/22/2016	Yes	64.4	68	F	154836/15A0526	UUS168	UUS167
8	Savanna	CC	6/4/2016	No	82	86.3	F	15A0022/154834	UUS161	UUS160
12	Tini	CC	6/23/2016	No	77	82.8	F	154839/15A0535	UUS170	UUS171
13	Charlie	CC	7/21/2016	No	72.7	78.3	F	15A0610/161454	MMC757	MMC756
14	Bosarge	CC	7/21/2016	No	83.6	88.6	F	15A0537/154841	MMC759	MMC758
15	Sandra	CC	7/21/2016	No	77.5	83	F	15A0950/161464	MMC761	MMC760
16	Stevie	CC	7/22/2016	No	85.2	89.6	M	15A0538/154842	MMC763	MMC762
17	Melody	CC	7/22/2016	Yes	91.2	97.6	F	15A0916/161456	LLY494	MMC764
18	Gracy	CC	7/22/2016	No	92	99.2	F	14A0096/154845	MMC766	MMC765
19	Amber	CC	7/24/2016	No	97.2	100.5	F	15A0539/154843	MMC769	MMC767
20	Seretse	CC	7/25/2016	No	97.2	101	M	15A0533/154837	MMC771	MMC770
21	Abba	CC	7/25/2016	No	75.8	80.9	F	15A0929/161460	MMC773	MMC772
22	Hayley	CC	7/25/2016	No	78.6	83.6	F	15A0925/161457	MMC774	MMC775
23	Sasha	CC	7/26/2016	No	79.1	85.1	F	15A0932/161463	MMC777	MMC776
24	Bella	CC	7/26/2016	No	76.3	82.3	F	15A0953/161467	MMC779	MMC778
25	Jessica	CC	7/26/2016	No	82	85.7	F	15A0951/161465	MMC781	MMC780
26	Bosley	CC	7/27/2016	No	83.4	88.5	M	15A0534/154838	MMC783	MMC782





- Ship Shoal: 10 individuals, Kemp's ridleys (n=9) and loggerheads (n=1)
- Tagged and relocated May/June 2016, high site fidelity
- Daily transmissions of location and depth profiles, www.seaturtle.org/tracking/?project_id=1205
 - Snapshot date, 15 December 2016



Take Away Messages

There are a number of environmental consultations that take place throughout the NEPA Process.

The MMP works diligently to improve these consultations and to ensure appropriate mitigation and minimization measures.

We continue to strive to improve these process and always welcome feedback from our stakeholders.

Further information is available here <https://www.boem.gov/Marine-Minerals-Research-and-Studies/>

OR by contacting us at marineminerals@boem.gov

